Written assignments to hand in.

Section 2.7
16, 56
Due Friday 10/26

Section 2.8
40, 56
Due Monday 10/30

Discussion Problems
From the department syllabus
These are not to hand in.

Practice Problems for Exam 2 posted on course website.

WebAssign

Sections 2.7 + 2.8
Due Monday 10/30, 9pm

Exam 2 will be covering
1.6-1.8, 2.1-2.8
Tuesday 10/31

1.6 22, 33, 52

(22) $2x^3+x^2-18x-9=0$ solve for x

$(2x^3+x^2)+(-18x-9)=0$

$x^2(2x+1)-9(2x+1)=0$

$(x^2-9)(2x+1)=0$

$(x-3)(x+3)(2x+1)=0$

$x-3=0$ or $x+3=0$ or $2x+1=0$

$x=3$ $x=-3$ $x=-\frac{1}{2}$

example $2x^3+x^2-x=0$

$x(2x^2+x-1)=0$

$x(2x-1)(x+1)=0$

$x=0$ or $2x-1=0$ or $x+1=0$

$x=0$ $x=\frac{1}{2}$ $x=-1$

(33) $\frac{x}{2x+7}-\frac{x+1}{x+3}=1$ LCD $=(2x+7)(x+3)$

$(2x+7)(x+3)\left(\frac{x}{2x+7}-\frac{x+1}{x+3}\right)=1\left((2x+7)(x+3)\right)$

$$\cancel{(2x+7)}\cancel{(x+3)}\frac{x}{\cancel{2x+7}} - (2x+7)\cancel{(x+3)}\frac{x+1}{\cancel{x+3}} = (2x+7)(x+3)$$

$$(x+3)x - (2x+7)(x+1) = (2x+7)(x+3)$$

$$x^2+3x - (2x^2+7x+2x+7) = 2x^2+7x+6x+21$$

$$x^2+3x-2x^2-9x-7 = 2x^2+13x+21$$

$$-x^2-6x-7 = 2x^2+13x+21$$
$$+x^2+6x+7 \qquad +x^2+6x+7$$

$$0 = 3x^2+19x+28$$

$$0 = (3x+7)(x+4)$$

$3x+7=0$ or $x+4=0$

$x=\frac{-7}{3}$ $\qquad$ $x=-4$

(52) $x^6-2x^3-3=0$

$(x^3)^2-2(x^3)-3=0$ ⟶ Think of this as $a^2-2a-3=0$

$(a-3)(a+1)=0$ where $a=x^3$

$(x^3-3)(x^3+1)=0$

$x^3-3=0$ or $x^3+1=0$

$x^3=3$ or $x^3=-1$

$X = \sqrt[3]{3}$ or $X = \sqrt[3]{-1}$

$X \approx 1.44$ $\quad$ $X = -1$

1.7 68, 70

(68) $\dfrac{1}{x+1} + \dfrac{1}{x+2} \leq 0$

Solve for x express answer as graph on a number line

$$LCD = (x+1)(x+2)$$

$$\frac{1}{x+1}\frac{x+2}{x+2} + \frac{1}{x+2}\frac{x+1}{x+1} \leq 0$$

$$\frac{x+2}{(x+1)(x+2)} + \frac{x+1}{(x+1)(x+2)} \leq 0$$

$$\frac{2x+3}{(x+1)(x+2)} \leq 0$$

Numerator = 0

$2x+3=0$

$x = -\frac{3}{2}$

Denominator = 0

$x+1=0$ or $x+2=0$

$x=-1$ or $x=-2$

$\frac{-}{---} = -$ $\quad x = -3$

$x = -\frac{7}{4}$ $\quad \frac{-}{-+} = +$

$x = -\frac{5}{4}$ $\quad \frac{+}{-+} = -$

$x = 0$ $\quad \frac{+}{++} = +$

$(-\infty, -2) \cup \left[\frac{-3}{2}, -1\right)$

(70) $\dfrac{(2x-1)(x-3)^2}{(x-4)} < 0$

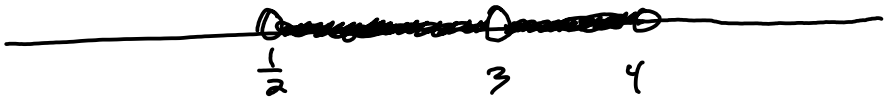
Numerator $= 0$

$2x-1=0 \quad x-3=0$

$x=\frac{1}{2} \quad x=3$

Denominator $= 0$

$x=4$



$x=0$: $\frac{-\cdot+}{-} = +$ $\quad x=1$: $\frac{+\cdot+}{-} = -$ $\quad x=3.5$: $\frac{+\cdot+}{-} = -$ $\quad x=5$: $\frac{+\cdot+}{+} = +$

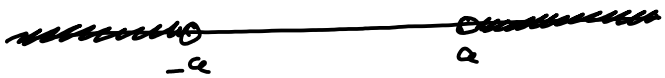
$\left(\frac{1}{2}, 3\right) \cup (3, 4)$

1.8 28, 33, 39

① $|x| < a$

$-a < x < a$

② $|x| > a$



$x < -a$ or $x > a$

③ $|x| = a$ $\quad x = a$ or $x = -a$

$|ab| = |a||b| \qquad \left|\frac{a}{b}\right| = \frac{|a|}{|b|}$

(28) Solve for x

$$|x-3| > 9$$

$x-3 < -9$ or $x-3 > 9$

$x < -6$ or $x > 12$

$$(-\infty, -6) \cup (12, +\infty)$$

(33) $|2x-3| \leq 0.4$

$-0.4 \leq 2x-3 \leq 0.4$

$+3 \quad +3 \quad +3$

$\frac{2.6}{2} \leq \frac{2x}{2} \leq \frac{3.4}{2}$

$\boxed{1.3 \leq x \leq 1.7}$

$$[1.3, 1.7]$$

(39) $4|x+2|-3<13$

$+3 \quad +3$

$\frac{1}{4}(4|x+2|)<(16)\frac{1}{4}$

$|x+2|<4$

$-4<x+2<4$

$-2 \quad -2 \quad -2$

$-6<x<2$

$(-6, 2)$

2.1 67, 69

(67) $g(x)=\sqrt[4]{x^2-6x}$ Find the domain.

This function is defined if and only if

$x^2-6x \geq 0$

$x(x-6) \geq 0$

Domain $=(-\infty, 0] \cup [6, +\infty)$